**Remarks/Arguments:**

This Amendment adds no new claims, and is provided to amend claims 1, 2, 6, 8, 9, 11, 12, 16, 18 and 19. No new matter has been added. Upon entry of this Amendment, claims 1-20 will be pending. Claims 1, 6, 8, 9, 11, 16, 18 and 19 are independent.

Claims

The Applicants have amended claims 2 and 12 to correct antecedent basis only.

Rejections of the Claims under 35 U.S.C. 103

The Examiner has rejected claims 1 and 11 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 7,024,039 of Simard et al. (hereinafter Simard) in view of U.S. Patent No. 6,782,135 of Viscito et al. (hereinafter Viscito) and U.S. Patent No. 5,809,183 of Serizawa et al. (hereinafter Serizawa).

Specifically, regarding claims 1 and 11, the Examiner points to:

1). Simard as describing a device and method for extending a character region in an image having an input part for receiving an input image, a block classification part for classifying the input image and converting pixels of the classified character blocks and the background blocks, a position search part for searching and determining a position of the character region by scanning the block-classified image, and an ROC extension part for extending an extracted image to a size of the input image. The Examiner points to the mask separator of the Simard reference as disclosing a device and method for substantially separating the character region from a background region.

Further, the Examiner points to:

2). Viscito as disclosing a device and method for adaptive digital video quantization using block energy values thereby disclosing a block classification part for classifying the input image into character blocks and background blocks *using block energy values*; and points to,

3). Serizawa as disclosing an apparatus and method for recognizing character information at a variable magnification using threshold values, thereby disclosing a block

classification part for classifying the input image into character blocks and background blocks using *a threshold value*, and extracting the character region to be recognized thereby disclosing an ROC extraction part for *extracting the image* of the determined position, purportedly rendering obvious the invention as recited by the Applicants in claim 1, and a method of control thereof as recited by the Applicants in claim 11.

The Simard reference describes a device and method for image retouching, having a boundary detector and an image extender. Specifically, the Simard reference describes a system and method for use with data compression wherein blocking artifacts along a blocking boundary are reduced by extending foregrounds and backgrounds along the boundary. In doing so, the image retoucher 100 receives an image input and a binary mask (see col. 6, lines 16-23), and the information stored in the received binary mask that indicates whether each pixel is in a background or foreground, and where a boundary exists.

As noted above, the Examiner points to Simard as describing a device and method for extending a character region in an image having an input part for receiving an input image, a block classification part for classifying the input image and converting pixels of the classified character blocks and the background blocks, a position search part for searching and determining a position of the character region by scanning the block-classified image, and an ROC extension part for extending an extracted image to a size of the input image. The Examiner points to the mask separator of the Simard reference as disclosing a device and method for substantially separating the character region from a background region

The Examiner points to the image retoucher 100 of Simard as disclosing an input part and a block classification part. As noted in the Applicants earlier response, the image retoucher 100 relies upon the received mask to determine the foreground and background pixels (see col. 6, lines 20-23). That is, the Applicants recite a system and method wherein no mask is used in the classification of the input image. The Applicants recite the classification through the use of *block energy values* and *a threshold value*.

The Examiner points to Viscito as disclosing a device and method for adaptive digital video quantization *using block energy values*, and points to Serizawa as disclosing an

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apparatus and method for recognizing character information at a variable magnification *using threshold values*.

However, the Simard reference recites the receipt and use of a mask for foreground and background pixels determination and as such, there would be no motivation to combine the block energy measurement features of Viscito, and a size threshold value of Serizawa, in place of the receipt of a mask. That is, Simard would require extensive redesign to replace the simple use of a received mask, with the block energy measurement features of Viscito, and a size threshold value of Serizawa.

Further, the threshold value of Serizawa is in regard to a size of character region, and not in regard to a block energy values or a determined block energy value threshold level (see col. 9, lines 13-17) as recited by the Applicants in independent claims 1 and 11 as amended. The Applicants have amended independent claims 1 and 11 to clarify the threshold value used. Accordingly, even when combined, the *size* threshold value disclosed by the Serizawa reference would not serve any function combined with the *block energy* measurement features of Viscito, nor easily serve to replace the mask and mask functions of Simard.

Accordingly, the Applicants do not believe that the Simard, Viscito and Serizawa references separately or when combined, disclose the block classification part for classifying the input image into character blocks and background blocks using block energy values and a block energy threshold value as recited by the Applicants.

The Examiner points to the image extender 120 of Simard and steps S408 and S501 of Serizawa as disclosing an ROC extraction and extension part. The Examiner points to the mask separator of the Simard reference as disclosing a device and method for substantially *separating* the character region from a background region, and points to Serizawa as disclosing the recognition of character information and the *extraction* of the character region, which is then extended to a size of the input image, allegedly as described by the system and method of the Simard reference.

The Serizawa reference describes a system and method for recognizing character information in a document. To do so, the system and method scans a document at a

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predetermined magnification and at updated magnification levels thereafter until character regions are identified at which time, a trimming step can be performed to extract the character region. The Examiner points to the image extender 120 of Simard as then describing a device and method for extending the extracted image, comprising character information devoid of background pixels, to a size of the input image. Specifically, the Examiner points to the image extender 120 and col. 6, lines 50-52 of Simard as describing extending the extracted image, comprising character information devoid of background pixels, to a size of the input image.

However, there is no disclosure in either the Simard or Serizawa references for the extension of either the identified character region in Serizawa, or the spurious boundary region in Simard, to a size of the *input image*. The Examiner points to Simard col. 6, lines 50-52 as disclosing such extension. However, the Simard reference simply describes the extension of the foreground and/or background near the spurious boundary to reduce artifact effects. There is no disclosure of the extension to a size of an input image. The Applicants point to Simard Figs. 5 and 6 which show that the boundary is determined, and the regions near the boundary are simply extended (see specifically Fig. 6). There is no disclosure or suggestion of an image expansion to the size of an input image as described by the Applicants in claims 1 and 11.

For these reasons, the Applicants assert that the Simard, Serizawa and Viscito references do not disclose or reasonably suggest each element as recited by the Applicants in independent claims 1 and 11 as amended, and the Applicants respectfully request the withdrawal of the rejection under 35 U.S.C. 103(a).

The Examiner has rejected claims 2-3 and 12-13 under 35 U.S.C. 103(a) as being unpatentable over Simard, in view of Viscito and Serizawa, and further in view of U.S. Patent No. 5,900,910 of Hirabayashi (hereinafter Hirabayashi).

Specifically, regarding claims 2 and 12, the Examiner points to Simard and Serizawa as disclosing the claimed invention with the exception of a discrete cosine transform conversion part, an energy calculation part, a threshold calculation part, a classification part

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and a block filling part. The Examiner points to Viscito and Hirabayashi as disclosing the remaining elements, purportedly rendering obvious the invention as recited by the Applicants in claim 2, and a control method thereof as recited by the Applicants in claim 12.

Regarding claims 3 and 13, the Examiner points to Simard and Serizawa as disclosing the claimed invention with the exception of the block size and energy calculation. The Examiner points to Viscito as disclosing the remaining elements, purportedly rendering obvious the invention as recited by the Applicants in claim 3, and a control method thereof as recited by the Applicants in claim 13.

However, for the reasons stated above, the Applicants assert that the Simard, Serizawa, and Viscito references do not disclose or reasonably suggest, alone or in combination, each element as recited by the Applicants in claims 1 and 11 as amended, from which claims 2-3 and 12-13 depend. Accordingly, the Applicants respectfully request the withdrawal of the rejection under 35 U.S.C. 103(a) of dependent claims 2-3 and 12-13 for the same reasons.

The Examiner has rejected claims 4 and 14 under 35 U.S.C. 103(a) as being unpatentable over Simard, Viscito, and Serizawa, in view of U.S. Patent No. 6,043,823 of Kodaira et al. (hereinafter Kodaira), and has rejected claims 5 and 15 under 35 U.S.C. 103(a) as being unpatentable over Simard, Viscito, and Serizawa, in view of Applicants' background materials.

Specifically, regarding claims 4 and 14, the Examiner points to Simard, Viscito and Serizawa as disclosing the claimed invention with the exception of the character region aspect ratio. The Examiner points to Kodaira as disclosing the remaining elements, purportedly rendering obvious the invention as recited by the Applicants in claim 4, and a control method thereof as recited by the Applicants in claim 14. Regarding claims 5 and 15, the Examiner points to Simard, Viscito and Serizawa as disclosing the claimed invention with the exception of performing bilinear interpolation. The Examiner points to the Applicants' Background materials as disclosing the remaining elements, purportedly rendering obvious

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the invention as recited by the Applicants in claim 5, and a control method thereof as recited by the Applicants in claim 15.

However, for the reasons stated above, the Applicants assert that the Simard, Viscito, and Serizawa references, do not disclose or reasonably suggest each element as recited by the Applicants in independent claims 1 and 11 as amended, from which claims 4-5 and 14-15 depend.

Further, although Kodaira is not relied upon for teaching such, there is no disclosure in the Kodaira reference for the extension of an extracted image to *a size of the input image*. The Kodaira reference describes a system method wherein characteristic amounts of orientation (i.e., image tilt), height, width and aspect ratio, can be recognized by an extraction section. However, there is no disclosure of the extension of an extracted image to a size of the input image as recited by the Applicants in independent claims 1 and 11.

Accordingly, the Applicants respectfully request the withdrawal of the rejection under 35 U.S.C. 103(a) of dependent claims 4-5 and 14-15 for the same reasons.


The Examiner has rejected claims 6-8 and 16-18 under 35 U.S.C. 103(a) as being unpatentable over Simard, in view of Viscito and Serizawa, and further in view of U.S. Patent No. 6,731,820 of Otsuka (hereinafter Otsuka).

Specifically, regarding claims 6, 8, 16 and 18, the Examiner points to Simard, Viscito and Serizawa as disclosing the claimed invention with the exception of a median filter for performing median filtering on the image output from the block classification part to remove blocks erroneously classified as character blocks. The Examiner points to Otsuka as disclosing the remaining elements, purportedly rendering obvious the invention as recited by the Applicants in claims 6 and 8, and a control method thereof as recited by the Applicants in claims 16 and 18.

Regarding claims 7 and 17, the Examiner points to Simard, Viscito and Serizawa as disclosing the claimed invention with the exception of the use of the median filter and filtering for determining isolated character blocks as erroneously classified character blocks. The Examiner points to Otsuka as disclosing the remaining elements, purportedly rendering

obvious the invention as recited by the Applicants in claim 7, and a control method thereof as recited by the Applicants in claim 17.

As noted above, the Examiner points to the image retoucher 100 of Simard as disclosing an input part and a block classification part. However, the image retoucher 100 relies upon the received mask to determine the foreground and background pixels (see col. 6, lines 20-23). That is, the Applicants recite a system and method wherein no mask is used in the classification of the input image, and recite the classification through the use of block energy values and a threshold value.

The Examiner points to Viscito as disclosing a device and method for adaptive digital video quantization *using block energy values*, and points to Serizawa as disclosing an apparatus and method for recognizing character information at a variable magnification *using threshold values*. However, the Simard reference recites the receipt and use of a mask for foreground and background pixels determination and as such, there would be no motivation to combine the block energy measurement features of Viscito, and a size threshold value of Serizawa, in place of the receipt of a mask. That is, Simard would require extensive redesign to replace the simple use of a received mask, with the block energy measurement features of Viscito, and a size threshold value of Serizawa.

Further, the threshold value of Serizawa is in regard to a *size* of character region, and not in regard to a block energy value threshold level (see col. 9, lines 13-17) as recited by the Applicants in independent claims 6, 8, 16 and 18 as amended. The Applicants have amended independent claims 6, 8, 16 and 18 to clarify the threshold value used. When combined, the size threshold value disclosed by the Serizawa reference would not serve any function combined with the block energy measurement features of Viscito, nor easily serve to replace the mask and mask functions of Simard.

Accordingly, the Applicants do not believe that Simard, Viscito and Serizawa separately or when combined, disclose the block classification part for classifying the input image into character blocks and background blocks using block energy values and a block energy threshold value as recited by the Applicants.

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The Examiner points to the image extender 120 of Simard and steps S408 and S501 of Serizawa as disclosing an ROC extraction and extension part. The Examiner further points to the mask separator of the Simard reference as disclosing a device and method for substantially *separating* the character region from a background region, and points to Serizawa as disclosing the recognition of character information and the *extraction* of the character region, which is then extended to a size of the input image, allegedly as described by the system and method of the Simard reference. ·

However, there is no disclosure in either the Simard or Serizawa references for the extension of either the identified character region in Serizawa, or the spurious boundary region in Simard, to a size of the *input image*. The Examiner points to Simard col. 6, lines 50-52 as disclosing such extension. However, the Simard reference simply describes the extension of the foreground and/or background near the spurious boundary to reduce artifact effects. There is no disclosure of the extension to a size of an input image (see also, Simard Figs. 2-6).

For these reasons, the Applicants assert that the Simard, Serizawa and Viscito references do not disclose or reasonably suggest each element as recited by the Applicants in independent claims 6, 8, 16 and 18 as amended, and the Applicants respectfully request the withdrawal of the rejection under 35 U.S.C. 103(a).

Further, as the Simard, Serizawa, and Viscito references do not disclose or reasonably suggest, alone or in combination, each element as recited by the Applicants in claims 6, 8, 16 and 18, from which claims 7 and 17 depend, the Applicants respectfully request the withdrawal of the rejection under 35 U.S.C. 103(a) of claims 7 and 17 for the same reasons.

The Examiner has rejected claims 9 and 19 under 35 U.S.C. 103(a) as being unpatentable over Simard, in view of Viscito, Serizawa, and Otsuka, and further in view of U.S. Patent No. 5,966,183 of Kondo et al. (hereinafter Kondo) and has rejected claims 10 and 20 under 35 U.S.C. 103(a) as being unpatentable over Simard, Viscito, Serizawa, Otsuka, and Kondo, and further in view of U.S. Patent No. 5,684,544 of Astle (hereinafter Astle).

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Specifically, the Examiner points to Simard, Viscito, Serizawa and Otsuka as disclosing the claimed invention with the exception of a subsampling part for subsampling pixels in the image output from the block classification part to reduce the number of the pixels, and a subsampling part for sub sampling the pixels at a subsampling ratio of $(2:1)^2$. The Examiner points to Kondo as disclosing the remaining elements of claims 9 and 19, and points to Astle as disclosing the remaining elements of claims 10 and 20, purportedly rendering obvious the invention as recited by the Applicants in claims 9 and 10, and a control method thereof as recited by the Applicants in claims 19 and 20.

However, as noted above, the Applicants do not believe that Simard, Viscito and Serizawa when combined, disclose the block classification part for classifying the input image into character blocks and background blocks using block energy values and a block energy threshold value as recited by the Applicants. The threshold value of Serizawa is in regard to a *size* of character region, and not in regard to a block energy value threshold level (see col. 9, lines 13-17) as recited by the Applicants in independent claims 9 and 19 as amended. The Applicants have amended independent claims 9 and 19 to clarify the threshold value used. When combined, the size threshold value disclosed by the Serizawa reference would not serve any function combined with the block energy measurement features of Viscito, nor easily serve to replace the mask and mask functions of Simard. Accordingly, the Applicants do not believe that Simard, Viscito and Serizawa separately or when combined, disclose the block classification part as recited by the Applicants. Further, there is no disclosure in either the Simard or Serizawa references for the extension of either the identified character region in Serizawa, or the spurious boundary region in Simard, to a size of the *input image*.

For these reasons, the Applicants assert that the Simard, Serizawa and Viscito references do not disclose or reasonably suggest each element as recited by the Applicants in independent claims 9 and 19 as amended, and the Applicants respectfully request the withdrawal of the rejection under 35 U.S.C. 103(a).

Further, as the Simard, Serizawa, and Viscito references do not disclose or reasonably suggest, alone or in combination, each element as recited by the Applicants in claims 9 and
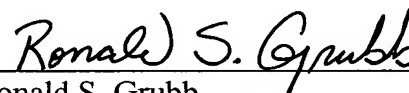
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19 as amended, from which claims 10 and 20 depend, the Applicants respectfully request the withdrawal of the rejection under 35 U.S.C. 103(a) of claims 10 and 20 for the same reasons.

Conclusion

In view of the above, it is believed that the application is in condition for allowance and notice to this effect is respectfully requested. Should the Examiner have any questions, the Examiner is invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

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